

Work Order ID 58758

Tuesday, May 18, 2010 12:43:41 PM



Page 1

Item ID: D205-634-041

Accept



Setup Start



Revision ID:

Item Name: Replacement Skidtube

Stop



Start Date: 5/18/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 6/2/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:



Date: 10-5-10

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Draw Number	Draw Rev.	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	----------------	--------------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
D2580	Rev D

100



DOCUMENT CONTROL

DC

Document Control

Memo

0.00

Photocopy D205-634 bluefile & type labels per PPP D205-634-041 CHG002

for BG 10/06/03
106669

110



BENDING MACHINE - SKIDTUBES

CNC Bend 1

Memo

0.00

CNC Delta 100 Bender

1-Bend as per program D2580.C on CNC Bender and Folio FT009

2-Cut tubes as per Dwg. D2580

10/15/25

58758

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center ID

120

Operation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Skidtubes

Memo

0.00

Skidtubes

1- Deburr ends

2- C'sink holes as per dwg without cutting fluid

3- Prepare tube for welding, remove alodine as required.

4- Scribe batch number insied aft end of tube.

10/9/25

130



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

Memo

0.00

(1)

BF 10/05/25

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Process Plan:

Date:

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

**Sequence ID/
Work Center ID**

140

**Operation
Description****Set Up/
Run Hours****Draw
Number****Draw
Rev.****Plan
Code****Accept
Qty****Reject
Qty****Reject
Number****Insp.
Stamp**

Skidtubes

Memo

0.00

Skidtubes

1-Weld step D2576 as per Dwg. D2580 and QSI 004
A/R□□□ Aluminum Rod

m112860

BE 10/05/25

2-Prep per QSI 005 and weld crossbolt spacers D2579 as per Dwg. D2580, QSI
004.For D2579 spacers, weld one side, pass 3/8" drill, weld other side, pass 3/8" drill
A/R□□□ Aluminum Rod

m112860

BE 10/05/25

3-Grind welds as per Dwg D2580 Grind flush ridge made from bending

K10/05/27

4-Drill holes for wearplates using DT 8217 & DT8937 Open holes to 19/64",
adjust stopper not to hit web. Deburr5-Counterbore crossbolt spacers to 7/16" ID x 1.0" deep as per Dwg D2580.
Deburr holes

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Deburr

7-Drill pilot holes for Tow ring using DT8091, open to .640" and Deburr

K10/05/27

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Reference:

Approvals: Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start



QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

Sequence ID/
Work Center ID

180



Powdercoat

Powder Coating

Operation
Description

White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum

M/14/207

Set Up/
Run Hours

0.00

Draw
Number

16

Draw
Rev.

06

Plan
Code

02

Accept
Qty

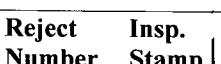
1

Reject
Qty

0

Reject
Number

106

Insp.
Stamp

190



QC

Quality Control

QC3- Inspect Part Finish

0.00

Memo

0.00

① BL 10-6-3.

W/O:		WORK ORDER CHANGES					
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Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

200



HandFinish

Memo

0.00

Hand Finishing

1-Install inserts & wearplates & Gaskets as per Dwg. D2580. Use a drop of
Sikaflex on insert holes before installing wearplatesA/R Sikaflex-291 113735 Sikaflex expire date: 10/112-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as
per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step & Aft Cap with
Sikaflex. Clean excess adhesiveA/R Sikaflex-291 113435 Sikaflex expire date: 10/11

5-Wing Walk as per Dwg D2580 and QSI 005 4.4

Batch: 114432

① BK 10-6-3.

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Cust Item ID:

Required Date: 6/2/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center ID

210



QC

Quality Control

Operation
Description

QC5- Inspect part completeness to step on W/O

Set Up/
Run Hours

0.00

Draw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

S voloblos

(40)

220



Packaging

Packaging

Packaging

0.00

0.00

Memo

Identify and pack for shipping as per PPPD205-634-041

Location: MPPP Rev: M

230



QC

Quality Control

QC21- Final Inspection - Work Order Release

0.00

Memo

0.00

MF
10-6-9

W/O:		WORK ORDER CHANGES						
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Parent Item: D205-634-041



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Start Date: 5/18/2010

Required Date: 6/2/2010

Comments: IPP Rev:N 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30 KJ

Start Qty: 1.00

IPP Rev P 10.02.19 per PAR09-043 EC verified by:DD

IPP Rev. O 06.02.28 Added paperwork EC

IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Required Qty: 1.00

D2580-1



Manufactured No

110

Each

6.0000

1



205 Skidtube bent detail

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
LG	6	
57028	1	
58090	1	
58112	2	
58384	1	
58385	1	

B587418 ① 10/05/25

D2576-3



Manufactured No

140

Each

105.0000

1



Step (machining detail)

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
LG	105	
46661	57	
52215	48	

1 8E 10/05/25

D2579



Manufactured No

140

Each

93.0000

20



Crossbolt Spacer

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
LG	93	
57052	5	
57348	88	

x4 78E 10/05/25
x16 3



B58433

W/O:		WORK ORDER CHANGES					
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IPP Rev. O 06.02.28 Added paperwork EC
IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Start Qty: 1.00

Required Qty: 1.00

D2855



Manufactured

No

200

Each

102.0000

1



Cap

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP6	2	
56613	2	
ST026	100	
50513	1	
50770	28	
51539✓	17	
53791	54	

1 BL 10-6-3

AN3-5A



Purchased

No

200

Each

957.0000

2



Bolt

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
ST350	957	
105057✓	957	

2 BL 10-6-3

AN960JD10L



Purchased

No

200

Each

4,141.000

2



Washer

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
ST348	4141	
110985✓	4141	

2 BL 10-6-3

ALS7-1032-130



Purchased

No

200

Each

17.0000

50



Insert

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
ST282	17	
114634	17	
110238	17	

50 . BL 10-6-3 .

ALS7-1032-130

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Start Qty: 1.00

Required Qty: 1.00

IPP Rev P 10.02.19 per PAR09-043 EC verified by:DD

IPP Rev. O 06.02.28 Added paperwork EC

IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

AN3C4A



Purchased No

200

Each

1,549.000

50



BOLT

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

ST350	1549	
114103 ✓	501	
114108 ✓	300	
114416	12	
114523	736	

50 BL 10-6-3

AN960C10L



Purchased No

200

Each

0.0000

50



washer

D3566-13



Manufactured No

200

Each

30.0000

1

50 BL 10-6-3

Gasket

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

FP	30	
53461 ✓	30	

1 BL 10-6-3

D3566-5



Manufactured No

200

Each

18.0000

1

Gasket

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

FP015	18	
57682 ✓	18	

1 BL 10-6-3

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IPP Rev. O 06.02.28 Added paperwork EC

IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Required Qty: 1.00

D3566-1



Manufactured No

200

Each

35.0000

2



Gasket

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

FP015	35	
57715	14	
58182✓	21	

2 Blk 10-6-3

D3564-11



Manufactured No

200

Each

6.0000

1



Wearshoc

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

FP019	59021	6
	57957	6

1 Blk 10-6-3

D3564-13



Manufactured No

200

Each

24.0000

1



Wearshoe

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

FP17	24	
57684✓	10	
57922	14	

1 Blk 10-6-3

D3564-9



Manufactured No

200

Each

19.0000

1



Wearshoe

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
-----------------	----------------	-----------------

FP	1	
55334	1	
FP019	18	
57685	4	
57958✓	14	

1 Blk 10-6-3

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IPP Rev. O 06.02.28 Added paperwork EC
IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM

Start Date: 5/18/2010

Required Date: 6/2/2010

Start Qty: 1.00

Required Qty: 1.00

D3564-5



Manufactured No

200

Each

4.0000

1



Wearshoe

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FG	1	
34806	1	
FP19	3	
58704		
57525	1	
57729	2	

1 Bk 10-6-3

D2594-3



Manufactured No

200

Each

359.0000

16



O-Ring, 205 Skidtube

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP	359	
55546	19	
58191	340	

16 Bk 10-6-3

D2594-1



Manufactured No

200

Each

534.0000

16



Plug, 205 Skidtube

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
FP	334	
42807	112	
55002	80	
57826	142	
FP14	200	
58434	200	

16 Bk 10-6-3

W/O:		WORK ORDER CHANGES					
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DART

DESIGN <i>#</i>	DRAWN BY <i>BS</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>#</i>	APPROVED <i>#</i>	DRAWING NO. D2580	REV. D SHEET 1 OF 3
DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY	SCALE NTS
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.26	REDRAWN, INCLUDED DEO 9094/9097	
D	07.02.27	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	

RELEASED
07-06-28 #

QTY -041	QTY -045	Part Number	Description
X		D2580-041	SKIDTUBE ASSEMBLY
	X	D2580-045	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
1	1	D2576-3	STEP
20	24	D2579	CROSS BOLT SPACER
16	16	D2594-1	PLUG
16	16	D2594-3	O-RING
1	1	D2596	205 WEB
1	1	D2855	AFT CAP
1	1	D3564-5	WEARSHOE
1	1	D3564-9	WEARSHOE
1	1	D3564-11	WEARSHOE
1	1	D3564-13	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1	1	D3566-13	GASKET
50	50	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
50	50	AN3C4A	BOLT
2	2	AN3-5A	BOLT
50	50	AN960C10L	WASHER
2	2	AN960JD10L	WASHER

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. *5875E*

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-205 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:
SEE NOTES ON
PAGE 2 FOR D2580-041 AND
PAGE 3 FOR D2580-045
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

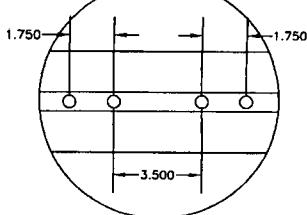
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DETAIL A
SCALE 5:24

SCALE 5:24

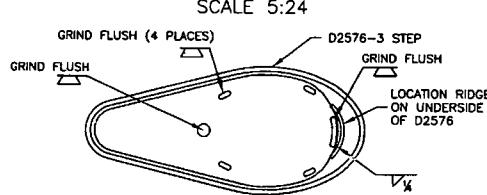


RELEASED
07-06-28-4

07.06.28 - 1

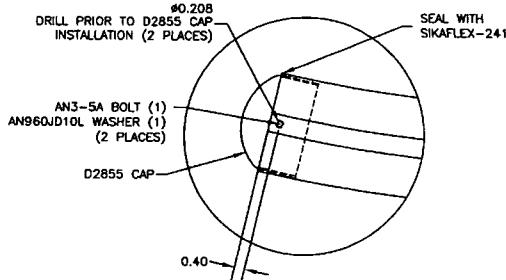
DETAIL B
SCALE 5:24

SCALE 5:24



DETAIL C
SCALE 5:24

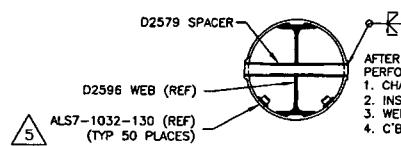
SCALE 5:24



WFO 58758

SECTION D-D
SCALE 5:24

SCALE 5:24



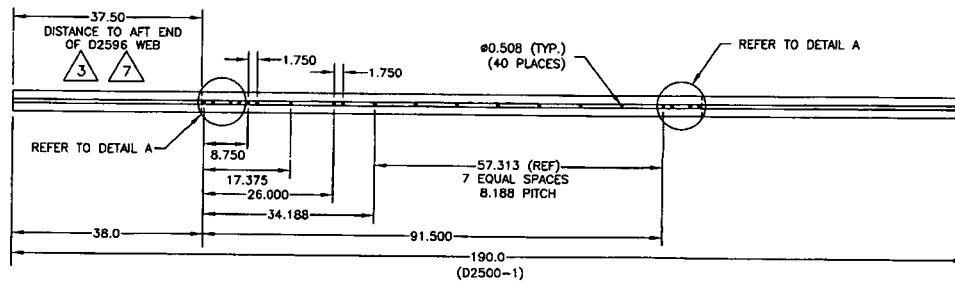
AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR #0.508 HOLES ONLY

1. CHAMFER HOLE 0.050 X 45°
2. INSERT D2579 SPACER (20 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C'BORE D2579 SPACER TO #0.437 X 1.00 DEEP

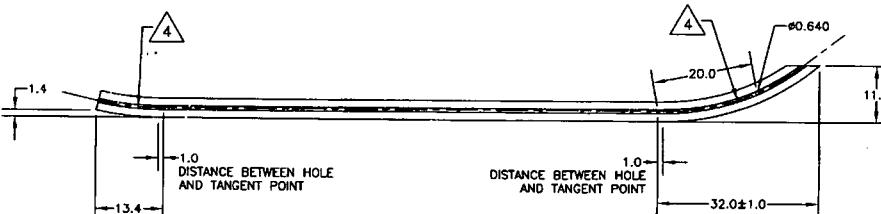
D2580-041 NOTES

i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB POWDER COAT ASSEMBLY GLOSS WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3 BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4

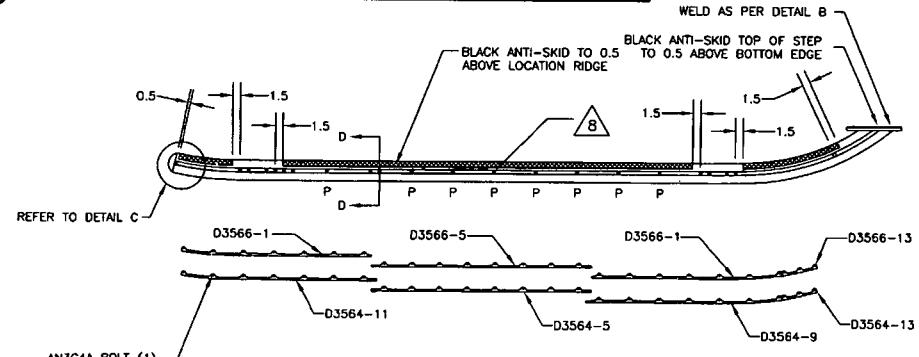
D2580-1 DRILLING DETAIL



D2580-1 BENDING AND CUTTING DETAIL



D2580-041 ASSEMBLY DETAIL



AN3C4A BOLT
AN960C10L WASHER
(50 PLAC)

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DESIGN	DRAWN BY	DART	DART AEROSPACE LTD. HAMILTON, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO.	REV. D	
		D2580	SHEET 2 OF 3	
DATE		TITLE	SCALE	
07.02.27		205 SKIDTUBE ASSEMBLY	1:24	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

W/O:		WORK ORDER CHANGES					
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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

NO. 232

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliott
Job number: 58008
Part number: D205 634 041
Description: 205 tube
Welding Process: Tig Mig
Base materiel: Aluminum
Current: AC DC

TEST REQUIREMENTS AND RESULTS

Visual: pass fail
Penetration: pass fail

UNACCEPTABLE

Cracks: pass fail
Undercut: pass fail
Pin holes: pass fail
Overlap (cold lap) pass fail
Porosity (surface): pass fail
Coloration: pass fail

Qualifier Barclay Elliott Date of Test Coupon 10.05.18

Welder Barclay Elliott Date of Test Coupon 10.05.18

The above named individual is qualified in accordance with AWS D17.1.2001 to weld